Frances Wedekind

A TRIP TO THE CHINOOK SALMON HATCHERY

CHINOOK, WASH.

A True Fish Story

(By August Hildebrand, Historian, Park Commissioner of Astoria, Kiwanian and member of the Angora Hiking club.)

Eight o'clock Sunday morning, January 10, 1926, the Angora Hiking club assembled at the Columbia river ferry slip, foot of Fourteenth street, Astoria, Ore., to take the scheduled trip to Chinook Wn.

The ferry took us to Point Ellis, Wn., a point five and a half miles distance in a northerly direction, crossing the Columbia river.

The following constituted the party:

John Berry, chief guide; Vivian Jackson, leader; Frances Wedekind, Mrs. E. Granlund, Ami Lagus, Charlotte Dueber, Miss Stirling, Hazel Behnke, Nellie Jarvis, Esther Juntti, Charles Hustwick, Mrs. Hustwick, William Barth, Dad Planting, E. Lien, Willie Weis, Ted Stokes, W. S. Stokes, Charles Johnson, Mr. Ingram, H. W. Williams, Charles Erickson, Merwyn Johnson, Nelson E. Willits, August Hildebrand and Albert Remmen acting as rear guide.

The genial skipper, Fritz Elfing, of the ferry "Tourist," a boat of about 18 auto and 150 passenger capacity, made us feel right at home. The impression of the trip was like taking an ocean pleasure ride on the wide Columbia. The weather was clear, the air was bracing and the river had just a little ripple on the surface.

As we traveled away from Astoria —looking back—the sun was rising over the hill of Astoria; the piercing rays shining through the tree tops and reflecting or refracting, from the more or less quiet waters, toward us.

The city stretched from Tongue Point to Smith's Point along the slope of the long hill between these points, Coxcomb Hill forming more or less the raised center, the apex, of this hill.

The larger hills and mountains, back of all this to the south, rise as we travel. Saddle mountain and Mount Nicoli, show up prominently in the background. On very clear days, snow capped Mt. St. Helens may be seen to the left in the very distance. A few sea gulls fly in the air or swim in the water; steamers and ships lie at anchor, or on the wharves, in the harbor. The port docks and other buildings show up imposingly. To our right is the entrance of the Columbia river with its three light houses. To our left the majestic Columbia flows towards us, the channel marked with buoys, and here and there fishing houses built on piles—seining camps or fish stations.

You may get somewhat of an impression by this description, but we advise that you make this trip in person on the ferry—if for no other reason than to see how beautiful your city and surroundings look from this setting.

After a ride of about 30 minutes, we landed on the north shore.

We assembled and counted members. The few automobiles that were on the ferry soon departed, and the Chinook-South Bend-Raymond-Olympia-Seattle - British Columbia stage with some passengers, also.

We hiked on a macadam road in a westerly direction.

Our first impression was of some nice growing spruce trees, of Christmas tree size, that grew in profusion.

The spruce tree is common on the lower lands along the north Pacific. When growing unhampered, they form into beautiful conical shape with strong branches, which makes them the ideal Christmas tree when small.

The huge cliffs and hills that form Scarborough head are about 600 feet high, and are of sandstone and volcanic rock formation. They are covered with a dense stand of coniforous trees (spruce, fir, hemlock), intermingled with some alders. These were now in their winter garb; it all making a green and brown color scheme.

Near the end of Scarborough head we passed through a railroad tunnel that passes under Fort Columbia. No one seemed interested in this fort that commands the entrance of the Columbia. Emerging from the northern end of this tunnel we beheld Bakers Bay before us. From the ferry landing to this part was about one and one half miles.

Bakers Bay lies between Scarborough head and Cape Disappointment to the north; two hilly promontories about 10 miles apart. The bay itself stretches in a half moon shape with Sand Island on the west, the ocean side, protecting it from the ocean breakers which lash unceasingly on the shore. This makes Bakers Bay more or less a protected bay of comparatively quiet waters, very near the ever rolling ocean. To the north and east, the bay is skirted with wooded green hills, at the foot of which stretch low lands composed of sand and silt that makes ideal dairy land, truck gardens and cranberry lands. Through this land two little mountain streams meander into the bay. One of these streams is called the Chinook and the other is called the Wallicut.

The Chinook flows through a settlemen, or little city, also called Chinook and the Wallicut flows near a settlement called Stringtown, farther west. In both places fisher folk predominate. Here fishing is done with traps, seines and in deep sea trolling with hooks; while in Astoria gill netting predominates with deep sea trolling, trapping and seining in lesser degrees.

It may be of educational value to mention here, that the City of Chinook and Chinook river, as well as the Chinook salmon which I will mention later, are all named after an early Indian tribe, the Chinooks, that were living in this place when Captain Gray entered the river with his ship, the Columbia, in the year 1792.

This was the first Indian tribe he came in contact with and on this account, the name Chinook is prominent in early northwest history.

Coming back to our hike—Bakers bay looks somewhat like a large valley through which a forest fire has swept, leaving the bleached tree stumps as mute reminders of former forest beauty. However, let me explain, that these supposed tree stumps are fish trap poles of various lengths that stay in the water over winter. The nets that hang on these poles during the fishing season are stored away until it is time to again use them.

Fish traps are easiest explained to those who have not seen them, by stating that they are made by piles driven in the river, bay or ocean bottom. On these nets are hung in such a way that all forms a trap similar to a French wire rat trap, that catches rats alive. However, no bait is used, they are simply lead into the corrals by fences so to speak.

We soon arrived in the little city of Chinook and went to the right, to the Washington State Fish hatchery located in this city.

The building was of a plain square, one-story construction.

In this building are long, wooden troughs about 10 inches wide and 6 inches deep into which are hung square wire baskets filled with salmon eggs in the state of hatching. Through the wire baskets and troughs flows a continuous stream of water cascading from trough to trough, finally returning to the river.

We were met by Clinton H. Jackson, the superintendent, who was glad to see us and who showed us in a courteous and obliging way around and explained all we observed, in his short, decisive manner.

His explanation of the salmon culture was about as follows:

"The eggs you see here hatching or developing are from Chinook salmon, caught in Bakers Bay, the bay that is right in front of you.

"This is an exclusive Chinook salmon hatchery. We do not aim to hatch silverside nor steelhead salmon, nor any of the other kinds like Bluebacks, which are the same or better than the sockeye salmon, of British Columbia, nor chum salmon which is a fall salmon.

"There are other kinds of salmon but the Chinooks, bluebacks and steelheads, the silversides and chum salmon are the salmon of the Columbia river of importance, in about the order named. The Chinooks form the major part, the bulk of the Columbia river fish.

"However, it is not generally known that there are four kinds of Chinook salmon distinct from each other. These kinds may be likened or compared with clans or families, as I will explain later.

"The salmon we utilize here are caught alive in fish traps—the traps that you see in the bay. From these they are transferred in floating crates. These crates are towed in the water to the Chinook river at a place about two miles or so below the hatchery. Here the river is diked clear across. The dike was placed for the purpose of keeping the ocean or bay water from over-flowing the lower tidelands.

"In this dike there is a sluice box to regulate the water to a certain level. Here, the crates, containing at times three tons (about 70 fish to the ton)—are towed and the released fish readily head up stream, through the sluice gates, into the river and cannot, and in fact, do not care to return to the ocean.

"It may be in order to state here, that the natural tendency, and natural way for a salmon is to come in from the ocean during spawning season. They go to the very shallow puddles, away up into the mountains, over barriers of cliffs, and waterfalls and over very shallow gravel bars of the very swiftly running mountain streams.

"In nature, where they spawn of their own accord, different varieties always go to different streams or lakes. It seems that the Chinook salmon picks out the swiftest streams, the very recesses of the snowclad Cascades and Canadian Rockies. After the female deposits its eggs in a convenient, shallow place, the male deposits its milt and the so fertilized eggs, begin in due time to hatch. The parent fish struggles even farther up stream and ends its life in this seemingly senseles and futile attempt. However, everything in nature has a cause and a consequence. The disintegrating bodies float, in flakes and smaller particles, down stream, serving the hatched young as food. Thus the parents sacrifice themselves so their young may live.

"No parent salmon returns to the ocean. However, an exception is the steelhead which must be classed as a trout, they spawn more than once.

"After the young salmon are of a certain growth, they float or swim to the ocean where they grow and remain four years. They then begin to feel the urge of nature to spawn in the same river their parents deposited them in. Experts claim that they have known fish seven years of age, but this is perhaps attributable to an accident. It is not a rule for salmon to live that long. It is claimed they can find their parent stream by reason of the salinity, or taste of the water. This is probably correct until a more plausible explanation is given.

"In artificial hatching, we try to follow nature as closely as possible, even so far as surroundings, etc., are concerned.

"Of course this Chinook river is only a small wooded coast ravine creek or rivulet that does in no way compare with the glacier fed mountain streams farther up the Columbia, in size nor surroundings. However, we try to make the salmon feel as much at home as possible. You see, this Chinook rivulet has only enough water in it to supply the hatchery and perhaps a much larger one should it be enlarged. The nearness of the bay and ocean and ease of transportation of the live fish to our inclosures, offset any handicap. I am sure that this Chinook hatchery, the stream, the traps and everything connected with it is ideal and can scarcely be duplicated anywhere else with the same conveniences.

"This is the only hatchery in the two states of Oregon and Washington equipped to take early fish. Last summer we began trapping for early Chinooks on June 20 and finished August 20.

"After the caught and released fish enter the lower part of the Chinook river, that part that is as yet the tide stream, they congregate in schools, according to the clan they belong to and inhabit certain parts of the stream, the same as in a city—certain nationalities will congregate in certain quarters. It seems as if nature started already with the fish, to form nations — or tribes in nations.

"The name of the earliest is called and labeled when canned 'Columbia River Early Spring Royal Chinook." When thus labeled, you are sure of getting the best.

"There are four varieties of Chinooks. There are 6000 eggs to each fish. Later variety, 4500 to 5000 eggs. The first ones are grey on back and white on belly. Second variety is reddish, when "ripe", all over. The third variety is black on back; and the fourth variety is smaller and also dark.

"The empounded fish swim further up this Chinook stream the more nature urges them to perform the reproducing act, then they enter shallower water.

"Here a specially constructed trap or weir holds them. This weir is clear across, at that place very narrow, river and detains the fish.

"They are then taken out of the water with dip nets, females first. They are "chloroformed" with a club and bled or killed by severing the jugular vein. The fish is then slit open with a knife and the eggs taken out as in a caesarian operation and put in a white enameled pan. This finishes the female, it is sacrificed the same as though dying in a natural way up in a mountain stream, except in a much quicker way.

"The male is then taken bodily out of the water and its milt squeezed over the eggs. The male is used this way several times and is then quickly put out of its misery. The eggs are fertilized as soon as the milt comes in contact.

"They are then washed with clear, cool water as soon as possible—the sooner the better—the eggs will not inflate and will then not cake together. The State of Washington is particular as to the quickness of this procedure. The eggs are then put into clear water for about six hours to harden so as to stand handling better. They are then put in wire baskets and are thus wheeled in wheelbarrows to the hatchery, which is about a third of a mile distance.

"This is the first stage of the hatching operation.

"The next is placing these wire baskets in wooden troughs.

"The eggs, by now, look about like dried yellow garden peas and are of about that size. During the process of hatching they grow somewhat larger. Like the peas, they have an outer shell that peels off during the first stage of incubation. These shells are scooped and skimmed clear from the eggs as they show up.

"A continuous stream of pure cold water, piped from the river flows through these troughs and takes the place of the mountain stream. The baskets are artificial puddles.

"It usually takes about 50 days from the time when spawned for the eggs to hatch. It depends on the temperature of the water. The shortest time that any eggs have hatched, at this hatchery, is 42 days and the longest 62 days.

Fifteen thousand eggs are in one basket. After they are hatched, more baskets are added so that 5000 fish are in each basket or space of a basket, the troughs being divided into compartments. An exact count of dead eggs and dead fish is made every day. Balanced the same as a bank account. The eggs are counted with a pint measuring cup holding about 1000 eggs.

"There are 3,271,000 fish on hand now and 641,000 eggs.

"To absorb the egg sac takes about the same length of time as hatching. To absorb takes from 50 to 60 days. Temperature has no effect on eggs or fish, excepting as to time of hatching. Average temperature is 48 degrees. Freezing would hurt. Muddy water has no bad effects. No fish died during the recent freshet, when the water was so muddy that you could hardly see the fish. One degree in temperature of the water, however, makes about 10 days difference in time of hatching. Warmth will help to develop faster. The eggs are stirred or agitated every day just a little from bottom to top, to keep the circulation of water through the eggs so they won't smother. If not stirred, half of the eggs, or a big percentage will burst.

'In 20 days, the eye commences to show. When in eye, they can be shipped; and can be out of water and live on air a reasonable length of time. A shipment was made to England which took 45 days. Put in baskets with wet burlap in moist condition.

"After the fish hatch, they lie all over the bottom of the wire baskets dormant. In a week's time there is a difference in color. As they develop, they take on different shades, and head upstream. The fish now absorb the egg sac which is as yet part of it. During this period, no food whatsoever is given. The absorbing of the egg gives it the nourishment for its first development at this stage.

'In the natural state not over 10 percent hatch; while in hatcheries, we don't have more than 8 or 10 percent loss.

"After the fish have absorbed most of the egg sacs, they drop through, or wriggle through, the wire openings of the hatching basket into the basket compartment of the trough itself; and when about one and one-half inches long, they are put in the rearing ponds. Here they get their first meal. This part of the artificial hatching is equal to the part when the young fish wriggle out of the shallow hatching pools into deeper water when in their natural streams, hatching in the natural way.

"Now another stage of the development follows:

"The rearing ponds used at this hatchery deserve more than passing notice.

"They were designed after years of study. They are made in an elongated, oval shape 80 feet long and 20 feet wide, built of 6 inch thick concrete walls—no bottom. The natural sandy or gravelly bottom is left so as to imitate more the natural river bed. The ponds are three feet deep and the water is within six inches from the top. In the center of these ponds, running the long way, is a dividing wall of the same thickness and height as the side walls. This dividing wall is 60 feet in length and stands in the center of the huge vat so to speak, not touching the side walls. The water is conveyed, shot, into this vat or pond from one side at one of the ends of the oval. This moves the water to the opposite of the oval and forces it like a merry-go-round, around the central wall to the place of the beginning.

"The overflow or outflow is then again near the place of the inflow. This forces the water in automatic action in a continual round-the-center-wall motion. This imitates the larger rivers in which the young salmon sport in a natural way, in their travels to the sea. The old way of airating the ponds by spraying the water into them, is done away with as not necessary.

"There are four ponds of a capacity of 600,000 fish each. Four more will be built soon to take care of the present supply of young fish that are now hatching.

"The water comes from the Chinook river about 1500 feet above the ponds. The main flume is 16 by 15 inches in size.

"The fish are fed with canned salmon. It is generally fish that is not properly labeled when in cans. This is against the law, and the fish are confiscated.

"It has been tried to use the spent salmon, that is, the parent salmon of the hatcheries, for food purposes at the hatchery; salting them down for future use. It has not been found profitable insofar that salt hardens the flesh and in particular the bones. These bones are detrimental to the digestive organs of the young fish, and as there seems to be a plentiful supply of condemned canned salmon, the parent fish is simply used for fertilizing purposes. The poorer grades of canned fish are even better suited for feeding purposes than the better—the rich, oily kind.

"This is logical, as the parent salmon in the natural state does not feed when in river waters. It deteriorates fast when expending its labors to buck the flow of the stream and obstructions. By the time it spawns it has lost all its surplus fat and is in a very poor and lean condition when ready to die for its young.

"The Chinook salmon having the largest amount of energy in the storage of fat, is the earliest in the river and goes farthest up the glacier fed torrents, while the chums are dry and lean and ascend only the lower coast streams late in the fall. This is one of the fundamental reasons why ocean and bay caught salmon, the Chinook variety, are of the very best quality.

"Now another stage of development follows:

"The last of May or first of June, the fish are released from the rearing ponds. They average two and one half to three and one half inches when let out.

"A plug is simply pulled, the same as a bung in a barrel and out they go into the river. In two days, they are in the bay on the way to the ocean. They stay close to the shore, to get used to salt water and eventually they pass the cape into the ocean. There they are at the mercy of their enemies, facing the wide, wide and cruel ocean, with all its hazards, temptations, allurements and pleasures—nothing but the guiding hand of the Almighty taking care of them. And four years hence, they are again entering the Columbia to complete their part of a natural cycle the Creator has mapped out.

"This hatchery has a capacity of about 5 million fish. Each pond can take care of about 600,000.

"There are, on the Columbia river, several hatcheries in Washington. Including the coast streams there are 18 hatcheries in Oregon with an output of about 75 million young fish in Oregon alone.

"Of course only a comparative small percentage of this enormous amount survives to the spawning age."

Here ended the very interesting lecture.

During all this time we were shown the different phases in the development, the hatchery buildings, the spawning racks, the ponds and the surrounding grounds.

Mr. Jackson has had many years' experience in the fish culture and made an impression as though he knows.

For my part, I may add that there are about 18 canneries on the Columbia, with an annual output of about 500,000 cases and some cold storage fish of a value of about six million dollars.

It is the intention to steadily increase the output of our hatcheries so that the Columbia will yield at least one million cases or its equivalent, or double the present yield.

As the previous high mark of production, before artificial hatching was resorted to, was over 600,000 cases, falling to a minimum of 250,000 cases before the importance of hatcheries was acknowledged; it may easily be seen that it is within a reasonable possibility to attain the million case mark.

The value of the product since the 600,000 case years, has steadily increased from a then valuation of $3,000,000 to double and was eclipsed only during two world war years, when inflated money brought the value up to over $7,000,000. The natural spawning grounds in our mountains must not be interfered with by artificial obstructions, such as dams. The natural spawning grounds are large factors in the propagation of salmon. The natural rivers give that sturdy natural replenishing stock so necessary to the preservation of species. The polution of our streams and rivers is also a vital question as the salmon, being a noble fish, demands pure, healthy environments.

Well, let us get down to our original story.

It was by now, near noon. Coffee, cakes and a pan of real American baked beans were kindly donated and furnished by Mrs. Jackson to help out our individual store of lunch goods. With all this we were in super-abundance. We lunched in the open, in front of the hatchery on a sort of a tideland meadow. The weather was perfect. The sun was shining and it seemed more like a pleasant spring day than a day in January. The pussy-willows were sprouting to view. Nature had favored us with good weather for this trip.

The historian ventured to suggest to Mr. Jackson that this was an ideal hiking day. His laconic answer was: "You struck it good today, sir, but do not undertake anything on January 14 or a few days thereafter. You will have rain and boisterous weather."

"Do you base your weather calculations on sun spots, atmospheric pressure, or perhaps you get your information from the U. S. Weather Bureau forecasts?"

"No, siree. I get my information out of Hicks' almanac, and you will find that the predicitions in this almanac come true 99 times out of 100."

The Historian was somewhat taken by surprise by this possitive utterance. Visions of Einstein, Huxley, Haeckel and the theory of sun spots came down with a thud to Hicks and his almanac. Shades of Benjamin Franklin and of lesser and plainer lights of American scientists came to view and upon closer reasoning—why not Hicks? He may come as close to it as anyone. Besides the manner in which it was spoken and because of the faith in it, it left no doubt as to whether Mr. Jackson had Stonewall Jackson's blood in his veins. This he had stated previously.

In justice to Mr. Jackson, and as a matter of vindication of Hicks' almanac—this being written after January 14— it is no more than right to state that January 13 was as yet clear. The morning of January 14 it started to rain; January 15 it was storming and on January 16 it was blowing a real gale. So here you are—take your hat off to Messrs. Jackson and Hicks and the almanac.

While standing on the dock of the cannery gazing over the broad expanse of the bay toward Sand Island and the ocean, a flock of sea diver ducks were sporting in the water.

It seemed that they stayed under water a long time, but when actually timed by watch, the average time under water was 30 seconds.

From here we went back to the hatchery. On the way we raided, for pay of course, several candy stores and enjoyed spending a few cents for children's delights.

On the way, the historian visited with Mr. and Mrs. C. A. Bellknapp, who had just finished and were living in a very modern house. The floors were covered with high-grade linoleum in every room, selected and laid down according to the latest dictates of fashion by Astoria artists. It must be seen to be appreciated.

Slowly we assembled for the return hike to the ferry landing. Everyone was in good spirits and during this delightful hike passed the charming estate of the McGowan family, old Columbia river salmon packers.

One incident on the return trip on the ferry was the placing of a notice in a bottle, telling of the Angora Hiking club's trip and offering 50 cents reward to the finder when duly returned to Astoria, Ore. The bottle was securely corked and sent adrift, to the seven seas, with a strong ebb tide boosting it along.

An incident of this kind, gives an incentive to all kinds of conjectures. This bottle may end its career at Sand Island or at our bathing beaches north and south of the Columbia or it may roam centuries and be found by some archologist who will try and decipher the hieroglyphics, and who will wonder who and what the Angora Hiking club was, etc.

The sun was dipping to the west.

We soon landed on the dock at Astoria.

Thus ended, under very favorable auspices, the first hike and travel of the 1926 season of the Angora Hiking club, an easy trip that was educational as well as recreational.

AUGUST HILDEBRAND,
Historian.